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Atty. Docket No. RSW9-99-118

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application Transmittal

Assistant Commissioner of Patents  
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the **Patent Application** of:

Inventor: J. R. Kraemer, et al

For: A Method and System for Identifying Teaser Surfers with Time Series Credit History Background of the Invention

Enclosed are:

- ☒ Ten (10) sheets of drawings.
- ☒ An assignment of the invention to International Business Machines Corporation, Armonk, New York 10504.
- ☐ A certified copy of a \_\_\_\_\_ application.
- ☒ An associate power of attorney.
- ☒ Declaration and Power of Attorney for Patent Application

The filing fee has been calculated as shown below:

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For:	No. Filed	No. Extra
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Total Claims	43-20 =	23
Indep. Claims	9 -3 =	6
<input type="checkbox"/> Multiple Dependent Claim Presented		
Surcharge-Late Filing Fee or Oath or Declaration		

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Date: February 16, 2000

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Catherine M. Robbins  
Catherine M. Robbins

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: J. R. Kraemer, Et al

Serial No.:                      Group No.:

Filed:                      Herewith

For: A Method and System for Identifying Teaser Surfers with Time Series Credit History  
Background of the Invention

Assistant Commissioner of Patents  
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**A METHOD AND SYSTEM FOR IDENTIFYING TEASER  
SURFERS WITH TIME SERIES CREDIT HISTORY  
BACKGROUND OF THE INVENTION**

**1. Technical Field:**

The present invention is related to consumer credit. More particularly the present invention is a system and method for identifying which potential customers are teaser surfers and point chruners for card issuers.

**2. Description of Related Art:**

Strong competition in the credit card industry has driven banks and credit card issuers to compete for profitable customers. Many of the credit card issuers have used "teaser" rates as a vehicle to lure customers away from a competitor or attract new customers. Low teaser rates such as 3.9%, 2.9% even 0% for a given time period such as three, six, or twelve months for both charges and balance transfers have been widely used by credit card issuers. The hope is that those customers who transfer their balances from a rival credit card issuer or charge on their new cards will stay after teaser rates expire. In 1997, more than 60% of all Visa (a registered trademark of Visa PO Box 8999 San Francisco, CA 94128-8999) and MasterCard (a registered trademark of MasterCard International 2000 Purchase Street Purchase, NY 10577 U.S.A.) offers were with low interest teaser rates and 18% of households in U.S. transferred balances.

Other than using teaser rates, some credit card issuers entice potential customers by issuing rewards. Generally the rewards are in the form of points

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which accrue as the credit card is used or balances are transferred. Popular rewards are in the form of frequent flyer miles and free hotel points. These rewards may be combined with low interest rates for initial balance transfers and charges within teaser period.

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As a result of this competition process, teaser surfers and point churners were born. Teaser surfers are those customers who transfer their balances from one card to another to take advantages of low introductory interest rates. Point churners are those customers who transfer their balance from card to card to accumulate points for frequent flyer miles, free hotel points, or other benefits. In turn, this lead to great losses for credit card issuers on teaser surfers and point churners because of free points and low interest rates (not enough to cover funding costs), acquisition costs, and operation costs. Being able to identify those teaser surfers and point churners could save a huge amount of losses for credit card issuers.

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It would be advantageous to provide credit card issuers with the means to help credit card issuers to filter out those teaser surfers from credit card solicitation process, which in turn will reduce costs of card solicitation process and avoid potential losses.

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### SUMMARY OF THE INVENTION

The present invention can be used by credit card issuers to identify those who are teaser surfers or point churners by examining historical credit bureau data. Credit card accounts are classified as new, relatively new, and old cards, *i.e.* opened within six months, within twelve months, and over twelve months ago. The balances for each of three categories are calculated for each month. The average balance percentages of credit cards opened within six months and twelve months for the last twenty-four months are then calculated. Teaser surfers are then defined as either having average percentages within the last twenty-four months for all credit cards opened within six and twelve months are greater than predefined percentages.

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## BRIEF DESCRIPTION OF THE DRAWINGS

5 The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

**Figure 1** is a block diagram illustrating a data processing system in which the present invention may be implemented;

10 **Figure 2** is a chart depicting a typical debt profile of traditional credit card account;

**Figure 3** is a chart depicting a debt profile of a non-traditional credit card account, wherein the customer has been lured by a low introductory interest rate and/or reward points;

15 **Figure 4** is a chart depicting a debt profile of a non-traditional credit card account, wherein an apparent teaser surfer customer has been lured by a teaser rate and/or reward points;

**Figure 5** is a chart depicting a debt profile taken from the total credit card debt of a customer;

20 **Figure 6** is a table containing credit card data readily available from a credit bureau;

**Figure 7** is a table containing data computed using an algorithm in accordance with a preferred embodiment of the present invention;

**Figure 8** is a chart depicting a debt profile taken from the total credit card

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debt of a customer broken down by individual credit card;

**Figure 9** is a flowchart depicting a process for rating potential credit card customers in accordance with a preferred embodiment of the present invention; and

**Figure 10** is a chart depicting the outcome of the process discussed above for the customer credit history.

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## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures, **Figure 1**, is a block diagram illustrating a data processing system in which the present invention may be implemented. Data processing system **100** is an example of a client computer. Data processing system **100** employs a peripheral component interconnect (PCI) local bus architecture. Although the depicted example employs a PCI bus, other bus architectures, such as Micro Channel and ISA, may be used. Processor **102** and main memory **104** are connected to PCI local bus **106** through PCI bridge **108**. PCI bridge **108** also may include an integrated memory controller and cache memory for processor **102**. Additional connections to PCI local bus **106** may be made through direct component interconnection or through add-in boards. In the depicted example, local area network (LAN) adapter **110**, SCSI host bus adapter **112**, and expansion bus interface **114** are connected to PCI local bus **106** by direct component connection. In contrast, audio adapter **116**, graphics adapter **118**, and audio/video adapter **119** are connected to PCI local bus **106** by add-in boards inserted into expansion slots. Expansion bus interface **114** provides a connection for a keyboard and mouse adapter **120**, modem **122**, and additional memory **124**. SCSI host bus adapter **112** provides a connection for hard disk drive **126**, tape drive **128**, and CD-ROM drive **130**. Typical PCI local bus implementations support three or four PCI expansion slots or add-in connectors.

An operating system runs on processor **102** and is used to coordinate and provide control of various components within data processing system **100** in **Figure 1**. The operating system may be a commercially available operating



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5 system such as a UNIX based operating system, AIX for instance, which is  
available from International Business Machines Corporation. "AIX" is a  
trademark of International Business Machines Corporation. Other operating  
systems include OS/2. An object oriented programming system, such as Java,  
10 may run in conjunction with the operating system and provide calls to the  
operating system from Java programs or applications executing on data  
processing system **100**. "Java" is a trademark of Sun Microsystems, Inc.  
Instructions for the operating system, the object-oriented operating system, and  
applications or programs are located on storage devices, such as hard disk drive  
15 **126**, and may be loaded into main memory **104** for execution by processor **102**.

Those of ordinary skill in the art will appreciate that the hardware in  
**Figure 1** may vary depending on the implementation. Other internal hardware or  
peripheral devices, such as flash ROM (or equivalent nonvolatile memory) or  
optical disk drives and the like, may be used in addition to or in place of the  
hardware depicted in **Figure 1**. Also, the processes of the present invention may  
20 be applied to a multiprocessor data processing system.

For example, data processing system **100**, if optionally configured as a  
network computer, may not include SCSI host bus adapter **112**, hard disk drive  
**126**, tape drive **128**, and CD-ROM **130**. In that case, the computer, to be  
25 properly called a client computer, must include some type of network  
communication interface, such as LAN adapter **110**, modem **122**, or the like. As  
another example, data processing system **100** may be a stand-alone system  
configured to be bootable without relying on some type of network  
communication interface, whether or not data processing system **100** comprises

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some type of network communication interface. As a further example, data processing system **100** may be a Personal Digital Assistant (PDA) device which is configured with ROM and/or flash ROM in order to provide nonvolatile memory for storing operating system files and/or user-generated data.

Neither the depicted example in **Figure 1** nor the above-described examples are meant to imply architectural limitations.

As mentioned above, identifying teaser surfers (customers who transfer their balances from one card to another to take advantages of low introductory interest rates) and point churners (customers who transfer their balance from card to card to accumulate reward points) is important for financial institutions that intend to remain solvent. Introductory rates and reward points might be thought of as a loss leader for the credit card issuer. Profitability of the credit card issuer necessitates that the customer maintain a balance on the card for a sufficient period of time after the teaser rate expires. Only by the customer maintaining a balance on the card can the card issuer recoup the cost off the introductory rate and/or reward points. Typically, teaser surfers and point churners do not maintain a balance on credit card accounts long enough for the credit card issuer to recoup losses incurred from the low teaser rates.

**Figure 2** is a chart depicting a typical debt profile for a traditional credit card account. Chart **200** shows thirty consecutive months of customer credit card data for a single card. The card is issued at month zero and month thirty is the most recent data month. The vertical axis is graduated in dollars of credit card debt. Curve **202** depicts credit card debt over time. Note that in the

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traditional approach the credit card issuer reaps a profit from the customer from the time the first charge was made by the customer. Here credit card debt has gradually accrued until stabilizing sometime between the first and second year.

**Figure 3** is a chart depicting a debt profile for a non-traditional credit card account, wherein the customer has been lured to open the account by a low introductory interest rate and/or reward points. Chart **300** also shows thirty months of customer data with the card being issued at month zero. Curve **302** depicts credit card debt over time. At first blush it appears that the credit card issuer has significantly increased the profit over the customer account depicted in **Figure 2** because the customer's initial debt is much higher than that shown on curve **202** in **Figure 2**. Here, credit card debt does not gradually increase. However, in the depicted example the customer has taken advantage of a teaser rate, so rather than profiting from the customer's credit card debt, the credit card issuer actually losses money on the customer during the period of the low introductory interest rate. The loss is considered an investment on the new customer by the credit card issuer. In order for the credit card issuer to receive a return on that investment, the customer must maintain a balance on the account for a sufficient period of time. Curve **302** illustrates that in this particular example, the customer has continued to maintain a balance after the teaser rate expired. Therefore, at some point in time the customer's account has become profitable for the credit card issuer.

**Figure 4** is a chart depicting a debt profile for a non-traditional credit card account, wherein a teaser surfer has been lured by a low teaser rate and/or reward points. Curve **402** depicts credit card debt over time. Note that unlike

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the debt profiles depicted in either **Figure 2** or **Figure 3**, the customer has not maintained a balance on the credit card. Here the teaser surfer has transferred significant debt to the credit card in order to take advantage of the teaser rate. Once the teaser rate expired the customer surfed to another low teaser rate credit card to avoid paying higher interest rates. Note the sharp drop in credit card balance after the sixth month.

In an effort to reduce the exposure to teaser surfers, a credit manager for a credit card issuer might simply examine each applicant's credit history for a debt profile similar to that illustrated by curve **402**. The problem with that approach is that the customer may have other reasons for discontinuing the credit card account. Many times a customer is disappointed with the service or lack of convenience offered by a particular financial institution. The customer may have originally intended to maintain a relationship with credit card issuer but been disappointed with some aspect of the relation. In that case the customer might be wrongly labeled as a teaser surfer. Denying a credit card to such a customer might cause the credit card company to lose a valuable long-term customer. So by merely identifying a credit card debt profile from a single credit card as that of a teaser surfer does not necessarily infer that the customer is actually a teaser surfer. More credit information is needed for the credit card issuer to accurately make such a determination.

**Figure 5** is a chart depicting a total credit card debt profile of a customer. Chart **500** shows forty-nine months of a customer's total credit card data. Curve **502** depicts the total credit card debt over time. Total credit card debt is influenced by the interplay between a myriad of opposing economic and

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personal factors. Some factors are fairly regular or cyclic such as increases in total credit card debt in anticipation of the holidays and debt contraction due to tax refunds and quarterly/yearly bonuses. Others are less rhythmical such as business expenses, emergencies and the receipt of one-time cash gifts. Curve **502** reflects some of those influences. A credit manager may attempt to spot individual teaser surfer debt profiles within the total credit card debt profile of a potential customer, however such a strategy is dangerous given the unpredictability of credit card debt. More importantly, attempting to spot a teaser surfer's debt profile from a customer's total debt profile is more likely to result in the rejection of a potentially profitable customer.

**Figures 6 and 7** are tables representing credit card data used for generating the charts in **Figures 5** and **Figures 8 - 10**. **Figure 6** is a table containing a customer's credit card data that is readily available from a credit bureau. Table **600** represents forty-nine months of data for ten different credit card accounts maintained during at least some portion of the forty-nine month period and the total credit card debt for each month. The oldest reported month is month one and the reporting month or current month is month forty-nine. The credit cards are listed as credit cards **802** through **820**. Without more than a quick glance at table **600**, it is apparent that a customer with credit cards **802 - 814** were teaser surfed. A customer with credit cards **816 - 820**, on the other hand, show a fairly constant balance during the reporting period and indicate more typical debt profiles of traditional credit card accounts. However, a credit manager might conclude that the customer with cards **802 - 820** is teaser surfer. The rationale is that table **600** shows a large number of apparent teaser surfer debt profiles versus the relatively small number of typical debt profiles from

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traditional credit card accounts.

**Figure 7** is a table containing data computed using the present process in accordance with a preferred embodiment of the present invention. Table **700** represents forty-nine months of computed data for the ten different credit card accounts shown in table **600** depicted in **Figure 7**. Each column represents a separate permutation commencing with total debt for new cards, which were opened for six or fewer months (6 mo). The next column lists debt for relatively new cards, which were opened twelve months or less (12 mo). The fourth column lists the percentage of debt maintained in new accounts versus the total credit card debt for a particular month (%<6 mo Debt) followed by the percentage of debt maintained for relatively new accounts versus the total credit card debt (%<12 mo Debt%).

The present invention proposes two ways to identify teaser surfers. The first and simplest one is to use average balance percentages of new and relative new cards based on historical credit information. Credit cards are grouped into three different categories based on issuing dates. Specifically, new, relatively new, and old cards; those that are opened within six months, within twelve months, and twelve months, respectively. Whether a card is opened within 6 months depends on each specific examination time point, but not at present time. Two years of historical data is used for the computation because of the trade-off between more information and costs. Then, the balances for each of the three categories are calculated for each month. The next step is to calculate the average balance percentages of the credit cards opened within six months and twelve months over the proceeding twenty-four month period or 12-month

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period. The final step is to identify those customers who are teaser surfers with the following rules:

1. If the average percentages within the last twenty-four months for all cards opened within six and twelve months are greater than predefined percentages (for example, 65% for all cards opened within six months or 85% within twelve months) and the age of file for the same customer is older than a predefined months/years (three years for example), then a customer is labeled as a teaser surfer.
2. If neither condition for cards opened within six months nor for within twelve months is satisfied, then the customer is not a teaser surfer.

**Figure 8** is a chart depicting a debt profile taken from the total credit card debt of a customer broken down by individual credit cards. Chart **800** shows forty-nine months of a customer's total credit card data, with respect to each credit card maintained during that reporting period. The credit cards are listed as credit cards **802** through **820**. Curves **802 - 820** are graphic representations of the data contained in columns **802 - 820** in table **600** in **Figure 6** for credit cards **802 - 820**. Chart **800** confirms the data from table **600** that the customer is a teaser surfer. Note that each of curves **802 - 814** begins with an initially high balance, which then retreats over a six to twelve month time period. Note however, that curves **816 - 820** maintain a fairly constant balance which is representative of the more typical debt profile of traditional credit card accounts.

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**Figure 9** is a flowchart depicting a process for rating potential credit card customers in accordance with a preferred embodiment of the present invention. The process begins by accessing a potential customer's credit history from a credit bureau/bureaus to examine if M months of data are listed in the file (step **902**). M may be any integer higher than the time periods used to define new and relatively new accounts used for the rating potential credit card customers, in a preferred embodiment the time periods are six and twelve months so the value of M must be greater than twelve months. A value of thirty-six months for M is preferred. Each month's total credit card balance is then summed for the time period listed on the credit history (step **904**). The debt on newly opened credit cards is then summed (step **906**) as is the debt on relatively newly opened credit cards (step **908**). A newly opened credit card is a credit card that has been opened for six months or less and a relatively newly opened credit card is a credit card that has been opened for twelve or fewer months.

One of ordinary skill in the art would recognize that the time period for taking advantage of low teaser rates is established by credit card issuers and might fluctuate. Currently, many credit card issuers limit the time period for receiving low teaser rates to six months. Other issuers have extended the period to twelve months, especially for earning reward points. A "new" credit card or account may also be defined as one in which a low teaser interest rate is offered and a "relatively new" credit card is one that teaser rates may still be offered, although less likely. Therefore, the terms "new" and "relatively new" are actually defined by the likelihood of receiving teaser rates rather than a set chronological time period. The time period for new and relatively new credit cards is dependent upon the duration of teaser rates and rewards. Clearly, as the



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duration of teaser rates on newly issued credit cards fluctuates, the time period used for defining new and relatively new credit cards must be adjusted accordingly.

Returning to the **Figure 9**, the percentage of total credit card debt that is attributable to new credit cards is calculated for each month (step **910**) along with the percentage of total credit card debt that is attributable to relatively new credit cards (step **912**). The average percentage of total credit card debt that is attributable to new credit cards is calculated for the previous twenty-four months (step **914**). Likewise, the average percentage of total credit card debt that is attributable to relatively new credit cards is calculated for the previous twenty-four months (step **916**). These percentages indicate the potential profitability of the customer with respect to teaser surfing. The lower the percentages, the less likely that the potential customer teases surfs to excess. More important to the credit card issuer, the average percentage of debt attributable to an open credit card for fewer than six and twelve months indicates whether the customer is generating a profit, for at least some of the credit card issuers. This holds true even assuming that all credit cards offer a low introductory rate.

The trick is to determine the cut-off values for the percentages. The values of the predetermined percentages must be set low enough for potentially profitable customers to get a credit card yet high enough to screen out teaser surfers from getting a credit card. In accordance with a preferred embodiment of the present invention the predetermined percentage for the twenty-four month average of the percentage of relatively new credit card debt is 85%, while the

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predetermined percentage for the twenty-four month average of the percentage of relatively new credit card debt is 65%. The twenty-four month averages of the percentage of new and relatively new credit card debt is then compared to the predetermined percentages (step **918**). Both predetermined percentage rates must not be exceeded prior to a potential customer being approved for a credit card (step **920**). If both predetermined percentage rates are exceeded, the customer is denied a credit card (step **922**). The process then ends.

**Figure 10** is a chart depicting the outcome of the process discussed above for the customer credit history shown on table **600** in **Figure 6**. Chart **1000** shows valid results for the most recent twenty-five of the forty-nine months of credit card history data. Curve **1002** represents a twenty-four month average of the percentage of new credit card debt and curve **1004** represents the twenty-four month average of the percentage of relatively new credit card debt. Curves **1002** and **1004** are merely exemplary for the purpose of describing the invention and would not normally be generated. Pragmatically, only a single value representing the twenty-four month average percentage of new credit card debt and the twenty-four month average percentage of relatively new credit card debt would be generated and then compared to a pair of predetermined percentages. Curves **1006** and **1008** represent the values for the predetermined percentages to be compared to curves **1002** and **1004**, respectively. Curves **1002** and **1004** represent data from the "24 avg<6 mo Debt" (preceding twenty-four months average of new account debt versus total debt) and the "24 avg<12 mo Debt" column (preceding twenty-four months average of relatively new account debt versus) of table **700** illustrated in **Figure 7**.

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Note that at least one of curves **1002** and **1004** exceed their predetermined percentages of 65% and 85%, respectively, for nearly the entire time period for which the curves are valid. These results could be anticipated given a cursory examination of curves **802 - 816** shown on **Figure 8**. However careful attention to curve **1002** reveals that the preceding twenty-four month average of new account debt versus total debt has been declining for the most recent five month period and has remained below the predetermine threshold percentage of 65% for the last two months. Furthermore, curve **1004** reveals that the preceding twenty-four months average of relatively new account debt versus total credit card debt is also below its predetermined threshold of 85% for the most recent two months. Therefore, the customer has been distinguished from a teaser surfer for each of the last two month and should be issued a credit card based on the present predetermined percentage criteria.

One advantage of this approach is that they can be used to identify teaser surfers quickly. The information can save a huge amount of money for credit card issuers on acquisition, operation, funding, and rewarding point costs that they may spend on those teaser surfers. In addition, both of them can be implemented easily with credit bureau information.

It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in a form of a computer readable medium of instructions and a variety of forms and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution.

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Examples of computer readable media include recordable-type media such a floppy disc, a hard disk drive, a RAM, and CD-ROMs and transmission-type media such as digital and analog communications links.

The description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiment was chosen and described in order to best explain the principles of the invention the practical application and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

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**CLAIMS:**

What is claimed is:

1. A data processing system implemented method for identifying teaser surfers:

receiving credit history data for a creditor;

summing total monthly credit card debt for all credit cards issued to the creditor for a one month period, wherein the total monthly credit card debt is summed for each of a predetermined number of months;

summing total monthly new credit card debt for all new credit cards issued to the creditor for a one month period, wherein the total monthly new credit card debt is summed for each of the predetermined number of months;

calculating a monthly percentage of new credit card debt to total credit card debt for a one month period, wherein the monthly percentage of new credit card debt to total credit card debt is calculated for each of the predetermined number of months;

calculating an average percentage of new credit card debt to total credit card debt over the predetermined number of months;

comparing the average percentage of new credit card debt to total credit card debt to a preset cutoff average percentage of new credit card debt to total

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18 credit card debt; and

19 issuing a credit card to the creditor based on the comparison of the  
20 average new credit card debt to total credit card debt to a preset cutoff average  
21 percentage of new credit card debt to total credit card debt.

2. The method recited in claim 1, further comprises:

summing total monthly relatively new credit card debt for all relatively new  
credit cards issued to the creditor for a one month period, wherein the total  
monthly relatively new credit card debt is summed for each of the predetermined  
number of months;

calculating a monthly percentage of relatively new credit card debt to total  
credit card debt for a one month period, wherein the monthly percentage of  
relatively new credit card debt to total credit card debt is calculated for each of  
the predetermined number of months;

calculating an average percentage of relatively new credit card debt to  
total credit card debt over the predetermined number of months;

comparing the average percentage of relatively new credit card debt to  
total credit card debt to a preset cutoff average percentage of relatively new  
credit card debt to total credit card debt; and

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15           issuing a credit card to the creditor based on the comparison of relatively  
16 new credit card debt to total credit card debt to a preset cutoff average  
17 percentage of relatively new credit card debt to total credit card debt.

1           3.     The method recited in claim 1, wherein a new credit card is a credit card  
2 having been issued to the creditor for less than six months.

1           4.     The method recede in claim 1, wherein a new credit card is a credit card  
2 having been issued to the creditor for a period of time less than a preset time  
3 period for low interest teaser interest rates.

1           5.     The method recited in claim 2, wherein a relatively new credit card is a  
2 credit card having been issued to the creditor for less than twelve months.

1           6.     The method recited in claim 2, wherein a relatively new credit card is a  
2 credit card having been issued to the creditor for a period of time less than two  
3 preset time periods for low interest teaser interest rates.

1           7.     The method recited in claim 1, wherein predetermined number of months  
2 is twelve months.

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1        8.     The method recited in claim 1, wherein predetermined number of months  
2        is twenty-four months.

1        9.     The method recited in claim 1, wherein the preset cutoff average  
2        percentage of new credit card debt to total credit card debt is sixty-five percent.

10.    The method recited in claim 2, wherein the preset cutoff average  
percentage of relatively new credit card debt to total credit card debt is  
eighty-five percent.

11.    A data processing system implemented method for identifying teaser  
surfers:

receiving credit history data for a creditor;

4        summing total monthly relatively new credit card debt for all relatively new  
5        credit cards issued to the creditor for a one month period, wherein the total  
6        monthly relatively new credit card debt is summed for each of the predetermined  
7        number of months;

8        calculating a monthly percentage of relatively new credit card debt to total  
9        credit card debt for a one month period, wherein the monthly percentage of  
10       relatively new credit card debt to total credit card debt is calculated for each of



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the predetermined number of months;

calculating an average percentage of relatively new credit card debt to total credit card debt over the predetermined number of months;

comparing the average percentage of relatively new credit card debt to total credit card debt to a preset cutoff average percentage of relatively new credit card debt to total credit card debt;

issuing a credit card to the creditor based on the comparison of relatively new credit card debt to total credit card debt to a preset cutoff average percentage of relatively new credit card debt to total credit card debt.

12. The method recited in claim 11, further comprises:

summing total monthly relatively new credit card debt for all relatively new credit cards issued to the creditor for a one month period, wherein the total monthly relatively new credit card debt is summed for each of the predetermined number of months;

calculating a monthly percentage of new credit card debt to total credit card debt for a one month period, wherein the monthly percentage of new credit card debt to total credit card debt is calculated for each of the predetermined number of months;

calculating an average percentage of new credit card debt to total credit

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11 card debt over the predetermined number of months;

12 comparing the average percentage of new credit card debt to total credit  
13 card debt to a preset cutoff average percentage of new credit card debt to total  
14 credit card debt; and

15 issuing a credit card to the creditor based on the comparison of new credit  
16 card debt to total credit card debt to a preset cutoff average percentage of new  
17 credit card debt to total credit card debt.

18  
19 13. The method recited in claim 11, wherein a relatively new credit card is a  
20 credit card having been issued to the creditor for less than twelve months and a  
21 credit card having been issued to the creditor for a period of time less than two  
22 preset time periods for low interest teaser interest rates.

23  
24 14. The method recited in claim 12, wherein a new credit card is on of a credit  
25 card having been issued to the creditor for less than six months and a credit card  
26 having been issued to the creditor for a period of time less than a preset time  
27 period for low interest teaser interest rates.

28  
29 15. The method recited in claim 11, wherein predetermined number of months  
30 is one of twelve months and twenty-four months.

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1        16.    The method recited in claim 12, wherein the preset cutoff average  
2        percentage of new credit card debt to total credit card debt is sixty-five percent  
3        and further wherein the preset cutoff average percentage of relatively new credit  
4        card debt to total credit card debt is eighty-five percent.

1        17.    A data processing system implemented method for identifying teaser  
2        surfers:

3                receiving credit history data for a creditor;

4                comparing an amount of new credit card debt to a total amount of credit  
5        card debt;

6                issuing a credit card to the creditor based on the comparison of the  
7        amount of new credit card debt to the total amount of credit card debt.

1        18.    The method recited in claim 17, further comprises:

2                comparing an amount of relatively new credit card debt to a total amount  
3        of credit card debt;

4                issuing a credit card to the creditor based on the comparison of the  
5        amount of relatively new credit card debt to the total amount of credit card debt.

1        19.    The method recited in claim 17, wherein the comparison of the amount of

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new credit card debt to the total amount of credit card debt is performed over a predetermined number of months.

20. The method recited in claim 18, wherein the comparison of the amount of new credit card debt to the total amount of credit card debt exceeds a first predetermined threshold and the comparison of the amount of relatively new credit card debt to the total amount of credit card debt exceeds a second predetermined threshold.

21. A data processing system for identifying teaser surfers:

- receiving means for receiving credit history data for a creditor;
- summing total monthly credit card debt for all credit cards issued to the creditor for a one month period, wherein the total monthly credit card debt is summed for each of a predetermined number of months;
- summing total monthly new credit card debt for all relatively new credit cards issued to the creditor for a one month period, wherein the total monthly new credit card debt is summed for each of the predetermined number of months;
- calculating a monthly percentage of new credit card debt to total credit card debt for a one month period, wherein the monthly percentage of new credit

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card debt to total credit card debt is calculated for each of the predetermined number of months;

calculating an average percentage of new credit card debt to total credit card debt over the predetermined number of months;

comparing the average percentage of new credit card debt to total credit card debt to a preset cutoff average percentage of new credit card debt to total credit card debt; and

issuing a credit card to the creditor based on the comparison of new credit card debt to total credit card debt to a preset cutoff average percentage of new credit card debt to total credit card debt.

22. The system recited in claim 21, further comprises:

summing means for summing total monthly relatively new credit card debt for all relatively new credit cards issued to the creditor for a one month period, wherein the total monthly relatively new credit card debt is summed for each of the predetermined number of months;

calculating means for calculating a monthly percentage of relatively new credit card debt to total credit card debt for a one month period, wherein the monthly percentage of new credit card debt to total credit card debt is calculated for each of the predetermined number of months;

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10 calculating means for calculating an average percentage of relatively new  
11 credit card debt to total credit card debt over the predetermined number of  
12 months;

13 comparing means for comparing the average percentage of relatively new  
14 credit card debt to total credit card debt to a preset cutoff average percentage of  
15 relatively new credit card debt to total credit card debt;

16 issuing means for issuing a credit card to the creditor based on the  
17 comparison of relatively new credit card debt to total credit card debt to a preset  
18 cutoff average percentage of relatively new credit card debt to total credit card  
19 debt.

1 23. The system recited in claim 21, wherein a new credit card is a credit card  
2 having been issued to the creditor for less than six months.

1 24. The system recede in claim 21, wherein a new credit card is a credit card  
2 having been issued to the creditor for a period of time less than a preset time  
3 period for low interest teaser interest rates.

1 25. The system recited in claim 22, wherein a relatively new credit card is a  
2 credit card having been issued to the creditor for less than twelve months.

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1        26.    The system recited in claim 22, wherein a relatively new credit card is a  
2        credit card having been issued to the creditor for a period of time less than two  
3        preset time periods for low interest teaser interest rates.

1        27.    The system recited in claim 21, wherein predetermined number of months  
2        is twelve months.

2        28.    The system recited in claim 21, wherein predetermined number of months  
3        is twenty-four months.

4        29.    The system recited in claim 21, wherein the preset cutoff average  
5        percentage of new credit card debt to total credit card debt is sixty-five percent.

1        30.    The system recited in claim 22, wherein the preset cutoff average  
2        percentage of relatively new credit card debt to total credit card debt is  
3        eighty-five percent.

1        31.    A data processing system for identifying teaser surfers:  
2            receiving means for receiving credit history data for a creditor;  
3            summing means for summing total monthly relatively new credit card debt  
4        for all relatively new credit cards issued to the creditor for a one month period,

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5 wherein the total monthly relatively new credit card debt is summed for each of  
6 the predetermined number of months;

7 calculating means for calculating a monthly percentage of relatively new  
8 credit card debt to total credit card debt for a one month period, wherein the  
9 monthly percentage of relatively new credit card debt to total credit card debt is  
10 calculated for each of the predetermined number of months;

11 calculating means for calculating an average percentage of relatively new  
12 credit card debt to total credit card debt over the predetermined number of  
13 months;

14 comparing means for comparing the average percentage of relatively new  
15 credit card debt to total credit card debt to a preset cutoff average percentage of  
16 relatively new credit card debt to total credit card debt;

17 issuing means for issuing a credit card to the creditor based on the  
18 comparison of relatively new credit card debt to total credit card debt to a preset  
19 cutoff average percentage of relatively new credit card debt to total credit card  
20 debt.

1 32. The system recited in claim 31, further comprises:

2 summing means for summing total monthly new credit card debt for all  
3 new credit cards issued to the creditor for a one month period, wherein the total



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4 monthly new credit card debt is summed for each of the predetermined number  
5 of months;

6 calculating means for calculating a monthly percentage of new credit card  
7 debt to total credit card debt for a one month period, wherein the monthly  
8 percentage of new credit card debt to total credit card debt is calculated for each  
9 of the predetermined number of months;

10 calculating means for calculating an average percentage of new credit  
11 card debt to total credit card debt over the predetermined number of months;

12 comparing means for comparing the average percentage of new credit  
13 card debt to total credit card debt to a preset cutoff average percentage of new  
14 credit card debt to total credit card debt; and

15 issuing means for issuing a credit card to the creditor based on the  
16 comparison of new credit card debt to total credit card debt to a preset cutoff  
17 average percentage of new credit card debt to total credit card debt.

1 33. The system recited in claim 31, wherein a relatively new credit card is a  
2 credit card having been issued to the creditor for less than twelve months and a  
3 credit card having been issued to the creditor for a period of time less than two  
4 preset time periods for low interest teaser interest rates.

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1 34. The system recited in claim 32, wherein a new credit card is on of a credit  
2 card having been issued to the creditor for less than six months and a credit card  
3 having been issued to the creditor for a period of time less than a preset time  
4 period for low interest teaser interest rates.

1 35. The system recited in claim 31, wherein predetermined number of months  
2 is one of twelve months and twenty-four months.

1 36. The system recited in claim 32, wherein the preset cutoff average  
2 percentage of new credit card debt to total credit card debt is sixty-five percent  
3 and further wherein the preset cutoff average percentage of relatively new credit  
4 card debt to total credit card debt is eighty-five percent.

1 37. A data processing system for identifying teaser surfers:  
2 receiving means for receiving credit history data for a creditor;  
3 comparing means for comparing an amount of new credit card debt to a  
4 total amount of credit card debt;  
5 issuing means for issuing a credit card to the creditor based on the  
6 comparison of the amount of new credit card debt to the total amount of credit  
7 card debt.

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1        38.    The system recited in claim 37, further comprises:

2                comparing means for comparing an amount of relatively new credit card  
3        debt to a total amount of credit card debt;

4                issuing means for issuing a credit card to the creditor based on the  
5        comparison of the amount of relatively new credit card debt to the total amount  
6        of credit card debt.

1        39.    The system recited in claim 37, wherein the comparison of the amount of  
2        new credit card debt to the total amount of credit card debt is performed over a  
3        predetermined number of months.

1        40.    The system recited in claim 38, wherein the comparison of the amount of  
2        new credit card debt to the total amount of credit card debt exceeds a first  
3        predetermined threshold and the comparison of the amount of relatively new  
4        credit card debt to the total amount of credit card debt exceeds a second  
5        predetermined threshold.

1        41.    A data processing system implemented computer program product for  
2        identifying teaser surfers:

3                receiving instructions for receiving credit history data for a creditor;

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4           summing instructions for summing total monthly credit card debt for all  
5 credit cards issued to the creditor for a one month period, wherein the total  
6 monthly credit card debt is summed for each of a predetermined number of  
7 months;

8           summing instructions for summing total monthly new credit card debt for  
9 all new credit cards issued to the creditor for a one month period, wherein the  
10 total monthly new credit card debt is summed for each of the predetermined  
11 number of months;

12           calculating instructions for calculating a monthly percentage of new credit  
13 card debt to total credit card debt for a one month period, wherein the monthly  
14 percentage of new credit card debt to total credit card debt is calculated for each  
15 of the predetermined number of months;

16           calculating instructions for calculating an average percentage of new  
17 credit card debt to total credit card debt over the predetermined number of  
18 months;

19           comparing instructions for comparing the average percentage of new  
20 credit card debt to total credit card debt to a preset cutoff average percentage of  
21 new credit card debt to total credit card debt; and

22           issuing instructions for issuing a credit card to the creditor based on the

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comparison of the average new credit card debt to total credit card debt to a  
preset cutoff average percentage of new credit card debt to total credit card debt.

42. A data processing system implemented computer program product for  
identifying teaser surfers:

receiving instructions for receiving credit history data for a creditor;

summing instructions for summing total monthly relatively new credit card  
debt for all relatively new credit cards issued to the creditor for a one month  
period, wherein the total monthly relatively new credit card debt is summed for  
each of the predetermined number of months;

calculating instructions for calculating a monthly percentage of relatively  
new credit card debt to total credit card debt for a one month period, wherein the  
monthly percentage of relatively new credit card debt to total credit card debt is  
calculated for each of the predetermined number of months;

calculating instructions for calculating an average percentage of relatively  
new credit card debt to total credit card debt over the predetermined number of  
months;

comparing instructions for comparing the average percentage of relatively  
new credit card debt to total credit card debt to a preset cutoff average  
percentage of relatively new credit card debt to total credit card debt;

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18                   issuing instructions for issuing a credit card to the creditor based on the  
19                   comparison of relatively new credit card debt to total credit card debt to a preset  
20                   cutoff average percentage of relatively new credit card debt to total credit card  
21                   debt.

10                   43.    A data processing system implemented computer program product for  
20                   identifying teaser surfers:

30                   receiving instructions for receiving credit history data for a creditor;

40                   comparing instructions for comparing an amount of new credit card debt  
50                   to a total amount of credit card debt;

60                   issuing instructions for issuing a credit card to the creditor based on the  
70                   comparison of the amount of new credit card debt to the total amount of credit  
80                   card debt.

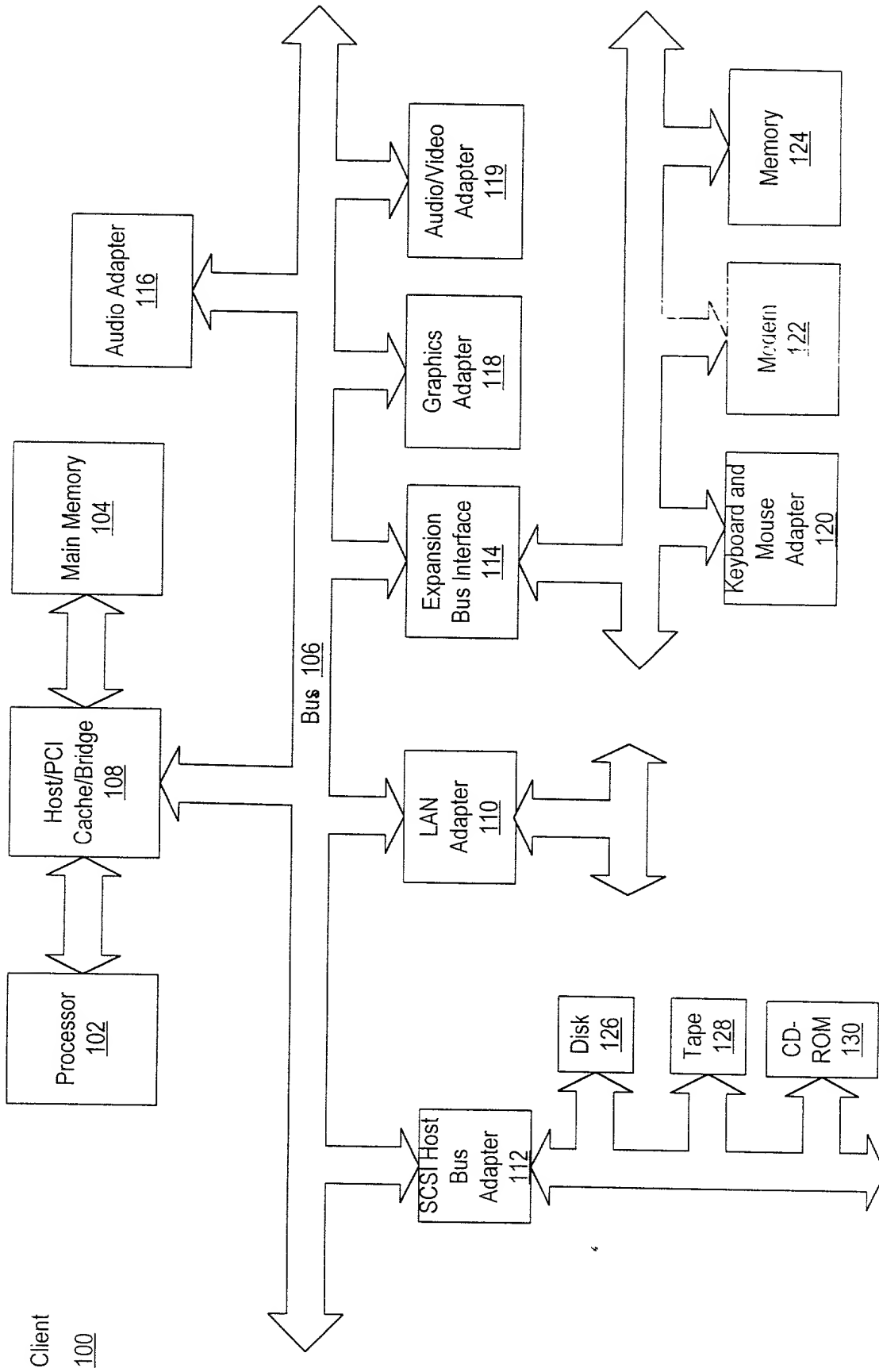
Docket No. RSW9-99-118

## **ABSTRACT OF THE DISCLOSURE**

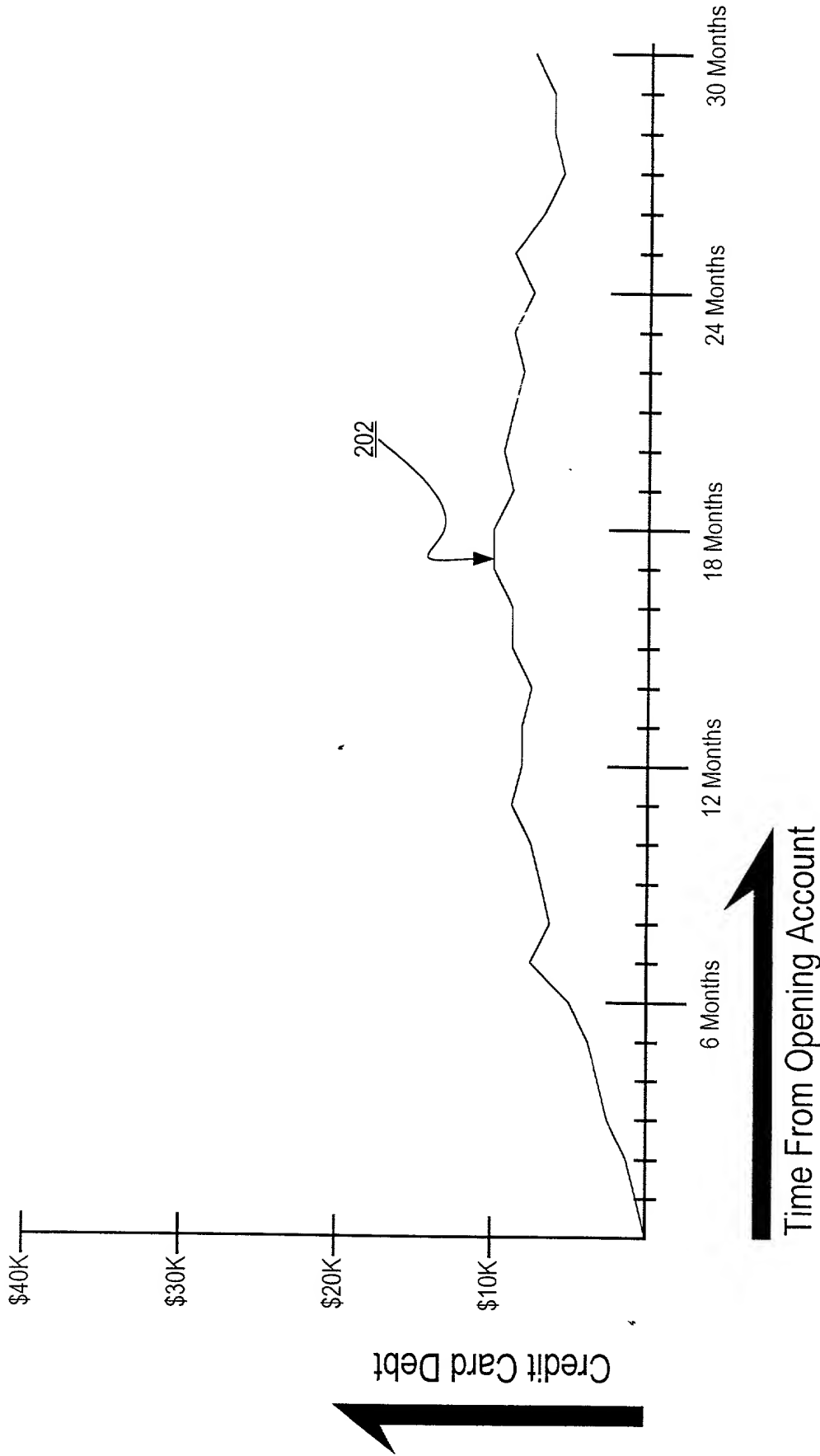
### **A METHOD AND SYSTEM FOR IDENTIFYING TEASER SURFERS WITH TIME SERIES CREDIT HISTORY**

Initially the amount of data is checked to determine whether a sufficient history is present for the method. Credit card accounts are classified as new, relatively new, and old cards, *i.e.* opened within six months, within twelve months, and over twelve months ago. The balances for each of the three categories are calculated for each month. The average balance percentages of cards opened within six months and twelve months for the last twenty-four months is calculated and teaser surfers are defined as either having average percentages within the last twenty-four months for all credit cards opened within six and twelve months are greater than predefined percentages.

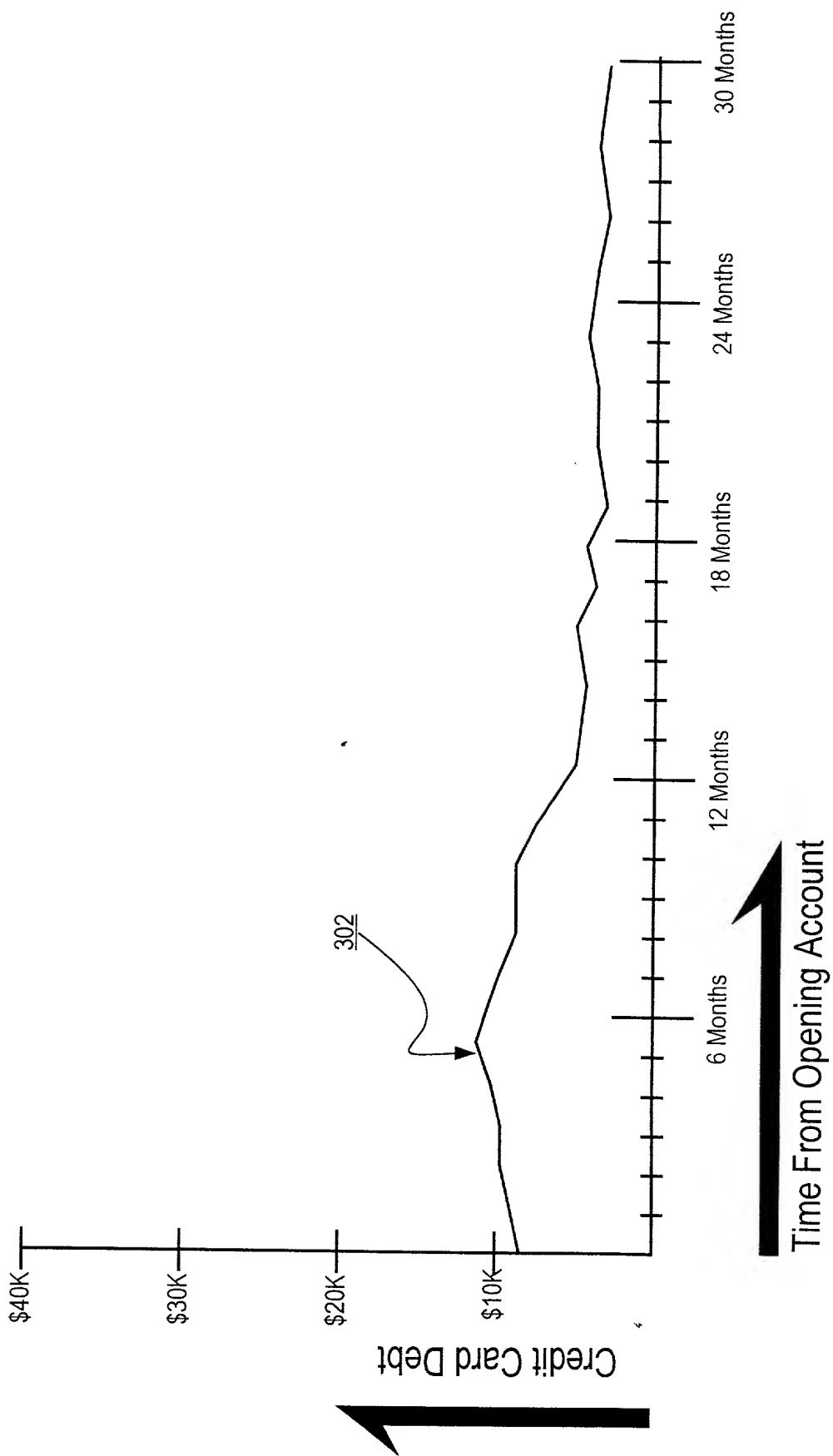
Figure 1  
RSW9-99-118



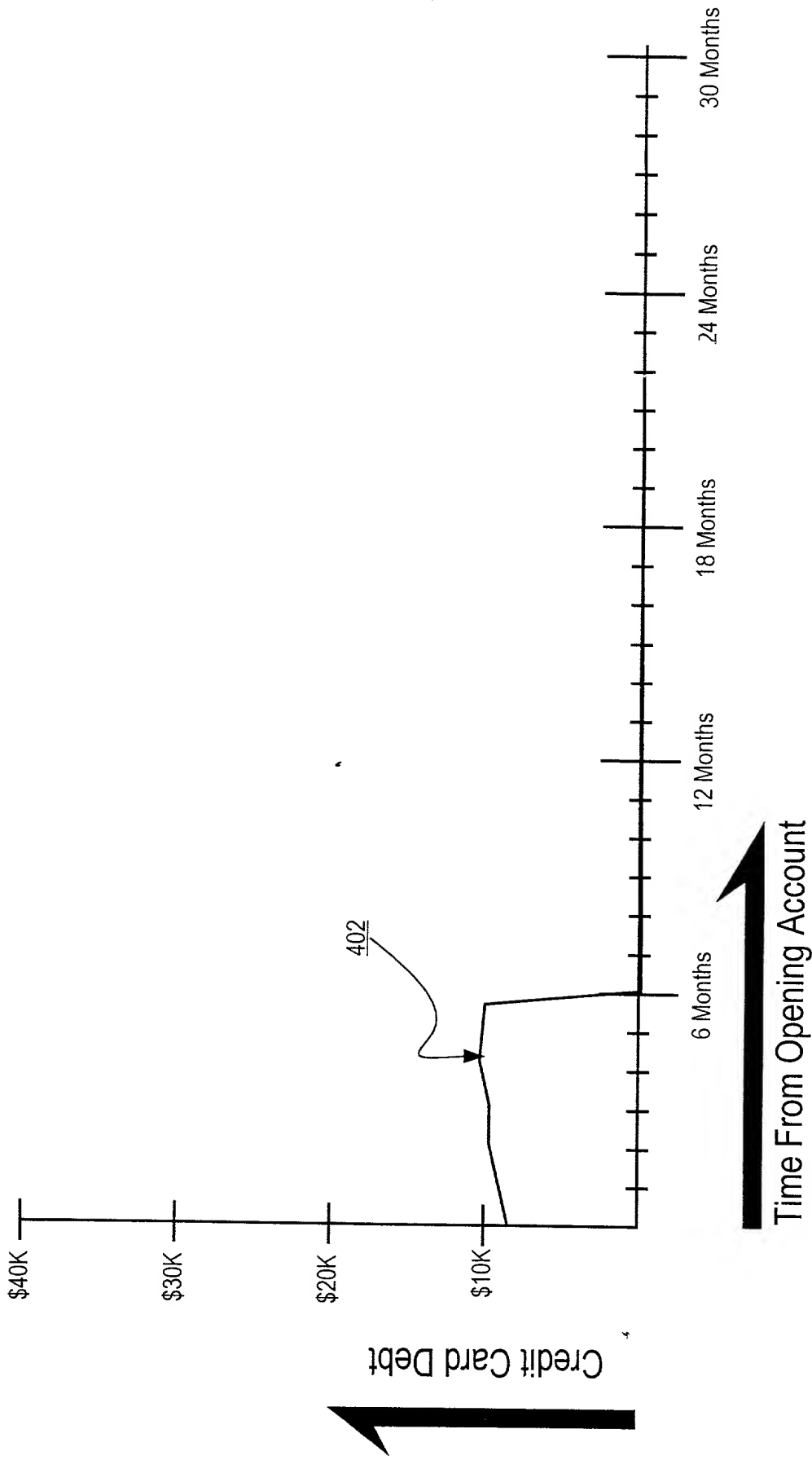




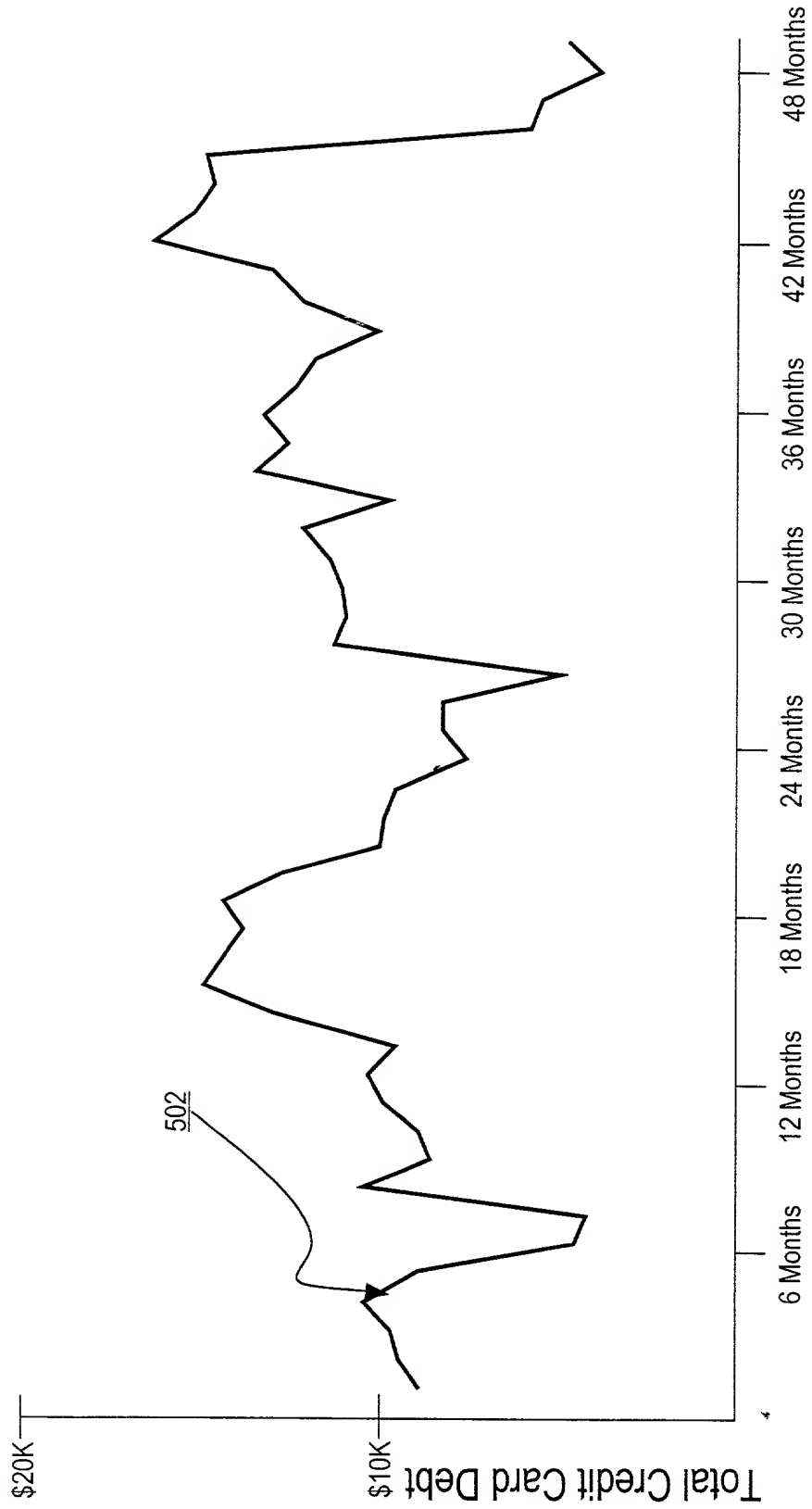
200  
**Figure 2**  
RSW9-99-118



300  
**Figure 3**  
RSW9-99-118



400  
**Figure 4**  
RSW9-99-118



Time

500  
**Figure 5**  
RSW9-99-118

Credit Card Debt											
Month	802	804	806	808	810	812	814	816	818	820	Total
1	6500							2100			8600
2	7000							1500			8500
3	7500							1700			9200
4	7500							1900			9400
5	8000							2200			10200
6	6500							2100			8600
7	1500							2200			3700
8	1300	0						2100			3400
9	600	7800						1900			10300
10	100	6450						1600			8150
11	100	6900						1500	0		8500
12	100	6750						1700	1100		9650
13	0	7350						1600	1200		10150
14	0	5400	0					1700	2140		9240
15	0	0	9467.25					1800	1700		12967.25
16	0	1110	11305.5					900	1900		15215.5
17	0	330	11253.8					850	2200		14633.75
18	0	0	10923.8					900	2100		13923.75
19	0	90	11742					600	2200		14632
20	0	90	9557.25	0				1000	2100		12747.25
21	0	0	2184.75	5720				900	900		9704.75
22	0	0	1893.45	6160				800	800		9653.45
23	0	0	873.9	6600				900	900		9273.9
24	0	0	145.65	6600				200	200		7145.65
25	0	0	145.65	7040				300	300		7785.65
26	0	0	145.65	5720				500	1500		7865.65
27	0	0	0	1590	0			900	1700		4190
28	0	0	0	1378	6825			1100	1900		11203
29	0	0	0	636	7350			600	2200	0	10786
30	0	0	0	106	7875			500	400	2100	10981
31	0	0	0	106	7875			750	350	2200	11281
32	0	0	0	106	8400			1100	500	2100	12206
33	0	0	0	0	6825	0		850	0	1900	9575
34	0	0	0	0	2500	9100		200	200	1600	13600
35	0	0	0	0	2745.14	7840		300	250	1500	12635.138
36	0	0	0	0	2379.12	8400		450	500	1700	13429.12
37	0	0	0	0	1098.06	8400		400	450	2100	12448.055
38	0	0	0	0	183.009	8960		350	400	1900	11793.009
39	0	0	0	0	183.009	7280	0	500	350	1600	9913.0092
40	0	0	0	0	0	1680	8775	0	200	1500	12155
41	0	0	0	0	0	1456	9450	200	350	1700	13156
42	0	0	0	0	0	4400	10125	250	400	1600	16775
43	0	0	0	0	0	112	10125	500	2100	2700	15537
44	0	0	0	0	0	112	10800	450	1900	1700	14962
45	0	0	0	0	0	112	11469.9	400	1600	1600	15181.938
46	0	0	0	0	0	0	1600	350	1500	1700	5150
47	0	0	0	0	0	0	1100	200	1700	1800	4800
48	0	0	0	0	0	0	200	350	1600	900	3050
49	0	0	0	0	0	0	0	400	2700	850	3950

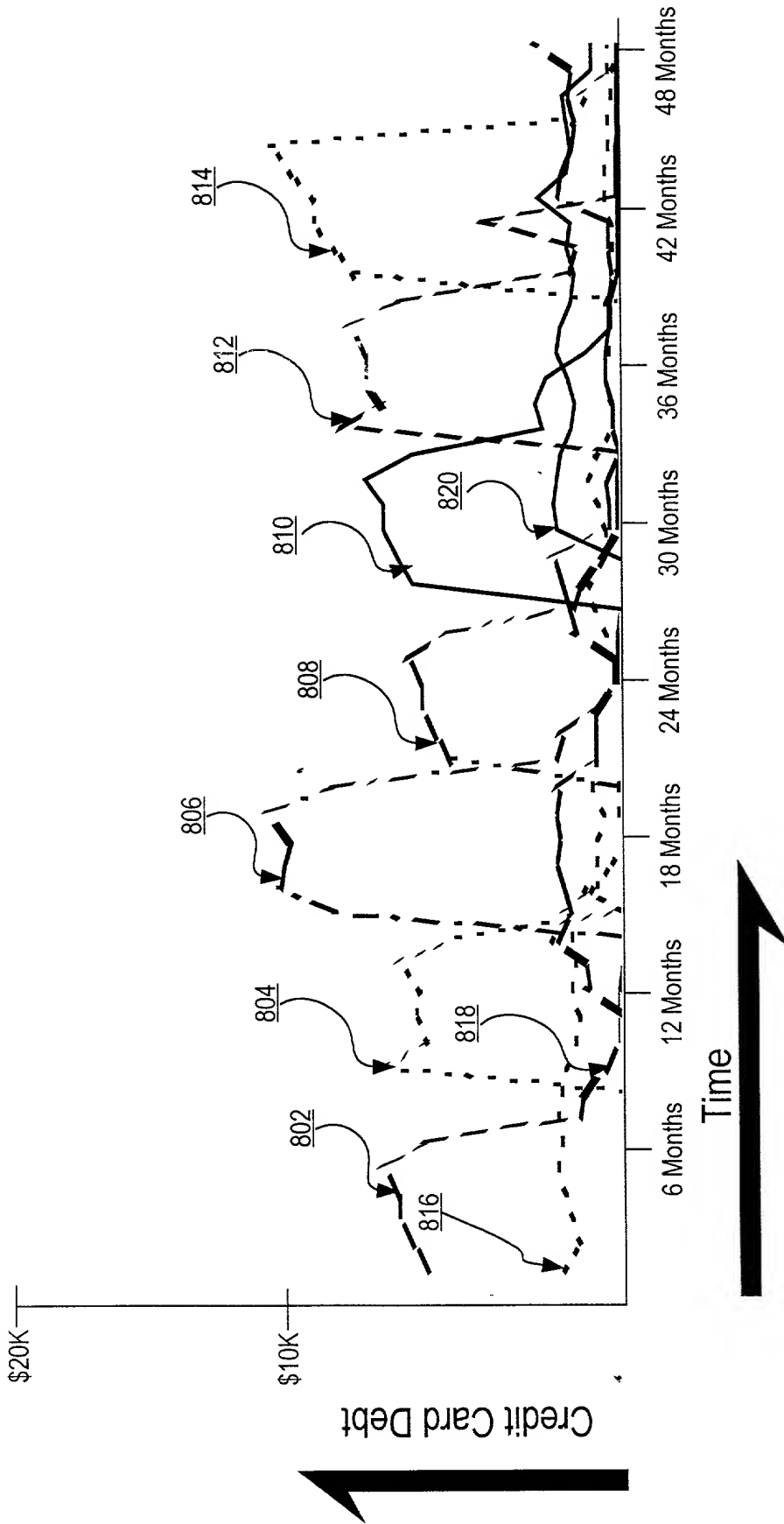
600

FIGURE 6

Month	6 mo	12 mo	% <6 mo Debt	% <12 mo Debt
1	6500	6500	0.755813953	0.755813953
2	7000	7000	0.823529412	0.823529412
3	7500	7500	0.815217391	0.815217391
4	7500	7500	0.79787234	0.79787234
5	8000	8000	0.784313725	0.784313725
6	6500	6500	0.755813953	0.755813953
7	1500	1500	0.405405405	0.405405405
8	0	1300	0	0.382352941
9	7800	8400	0.757281553	0.815533981
10	6450	6550	0.791411043	0.803680982
11	6900	7000	0.811764706	0.823529412
12	7850	7950	0.813471503	0.823834197
13	8550	8550	0.842364532	0.842364532
14	7540	7540	0.816017316	0.816017316
15	11167.3	11167.25	0.861188764	0.861188764
16	13205.5	14315.5	0.867897867	0.940849791
17	13453.8	13783.75	0.919364483	0.941915094
18	10923.8	13023.75	0.784540803	0.935362241
19	11742	14032	0.802487698	0.958993986
20	9557.25	11747.25	0.749749946	0.921551707
21	5720	8804.75	0.589402097	0.907261908
22	6160	8853.45	0.638113835	0.917128073
23	6600	7473.9	0.7116747	0.8059069
24	6600	6745.65	0.923638857	0.944021887
25	7040	7185.65	0.90422765	0.922935144
26	5720	5865.65	0.727212627	0.745729851
27	0	1590	0	0.37947494
28	6825	8203	0.609211818	0.732214585
29	7350	7986	0.681438902	0.740404228
30	9975	10081	0.908387214	0.918040251
31	10075	10181	0.893094584	0.902490914
32	10500	10606	0.860232672	0.868916926
33	8725	8725	0.911227154	0.911227154
34	10700	13200	0.786764706	0.970588235
35	9340	12085.1384	0.739208367	0.956470599
36	8400	12479.1199	0.625506366	0.929258209
37	8400	11598.0554	0.674804197	0.931716242
38	8960	11043.0092	0.759772152	0.936403001
39	7280	9063.00923	0.734388502	0.91425409
40	8775	11955	0.721925134	0.983545866
41	9450	12606	0.718303436	0.95819398
42	10125	14525	0.603576751	0.865871833
43	10125	10237	0.651670207	0.658878805
44	10800	10912	0.721828633	0.729314263
45	11469.9	11581.9375	0.755498928	0.762876115
46	0	1600	0	0.310679612
47	0	1100	0	0.229166667
48	0	200	0	0.06557377
49	0	0	0	0

700

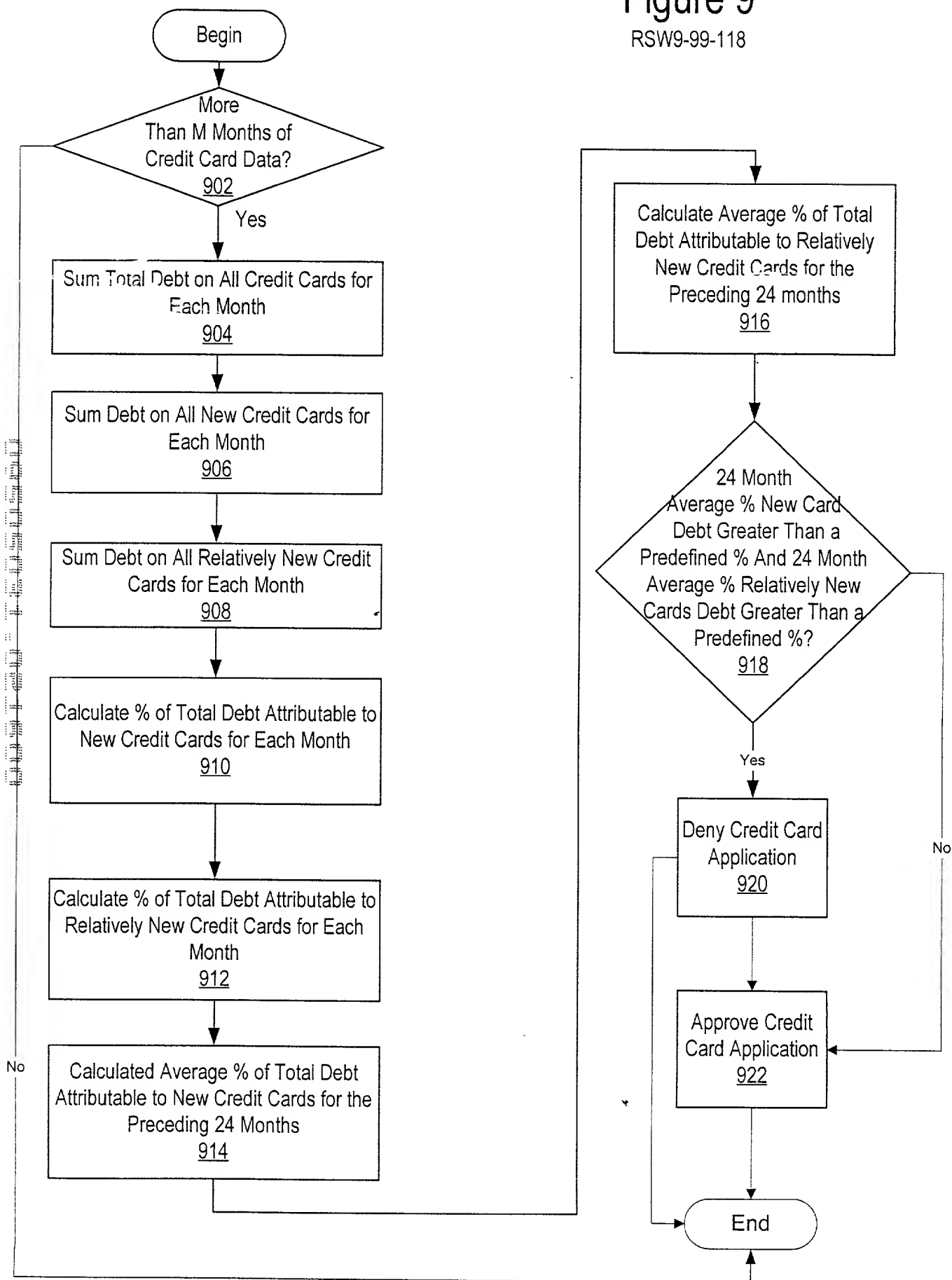
Figure 7  
RSW9-99-118



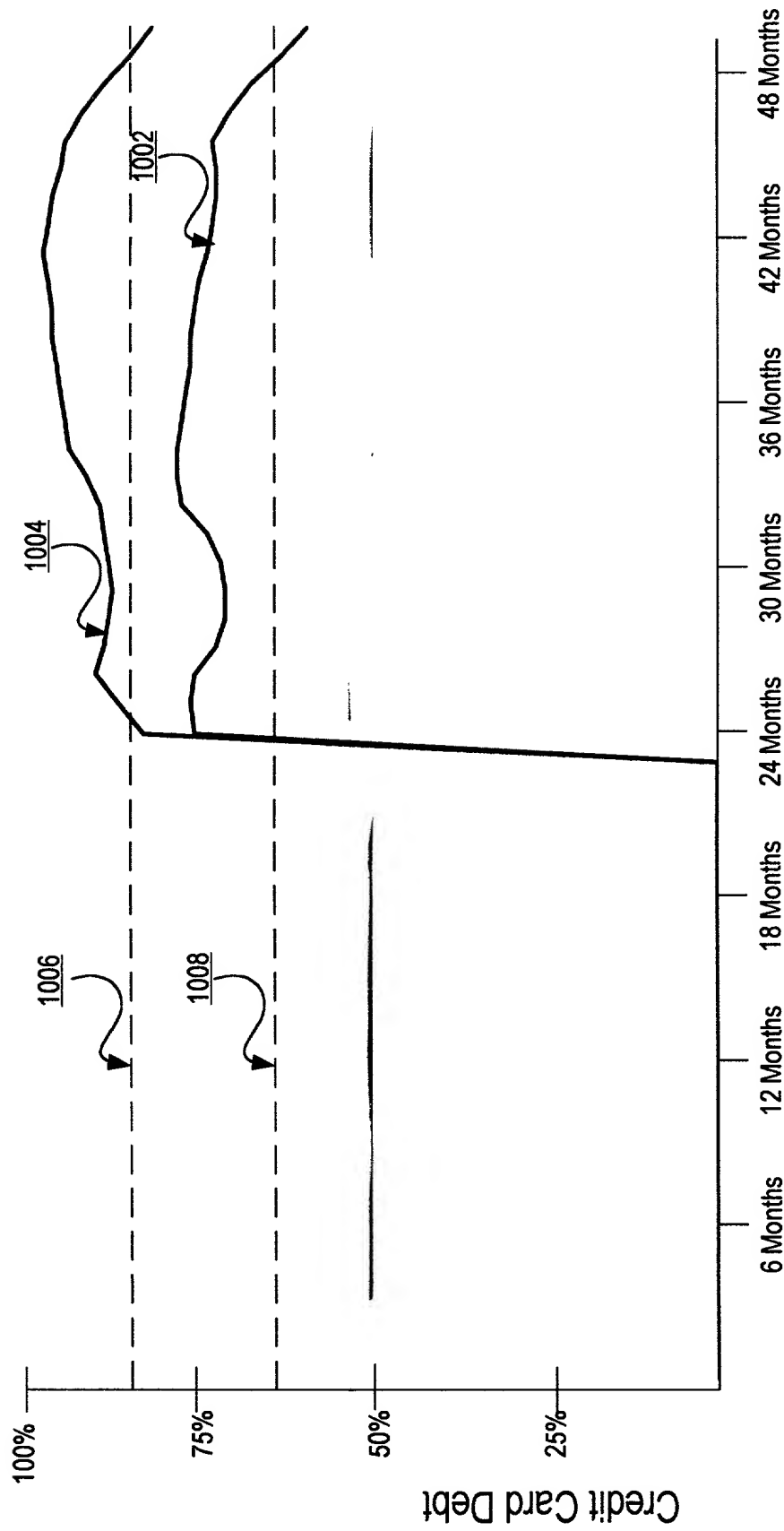
800  
**Figure 8**  
RSW9-99-118

Figure 9

RSW9-99-118







Time

1000  
Figure 10  
RSW9-99-118

### Declaration and Power of Attorney for Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

#### A METHOD AND SYSTEM FOR IDENTIFYING TEASER SURFERS WITH TIME SERIES CREDIT HISTORY BACKGROUND OF THE INVENTION

the specification of which (check one)

☒

is attached hereto.

☐

was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_.

I hereby state that I have reviewed and understand the contents of the above- identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):

Number

Country

Day/Month/Year

Priority Claimed

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information material to the patentability of this application as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Prior U.S. Applications:

Serial No.

Filing Date

Status

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

As a named inventor, I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

A.B. Clay, Reg. No. 32,121; G. M. Doudnikoff, Reg. No. 32,847; E. H. Duffield, Reg. No. 25,970;  
J. W. Herndon, Reg. No. 27,901; J. S. Ray-Yarletts, Reg. No. 39,808; Gerald R. Woods, Reg. No. 24,144

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